IEEE 802.11b

Wireless LAN PCMCIA Card

User Manual

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X-Micro WLAN PCMCIA Card

User’s Manual

Version 1.1

INFORMATION TO USER

Product Name: X-Micro WLAN 11b PCMCIA Card
Model Name: XWL-11BPRG

FCC INFORMATION

FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communication. However, there is no grantee that interference will not occur in a particular installation. If this equipment dose cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

--Reorient or relocate the receiving antenna.
--Increase the separation between the equipment and receiver.
--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
--Consult the dealer or an experienced radio/TV technician for help.

Notice: The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification not expressly approved by the party responsible could void the user's authority to operate the device.

REGULATORY INFORMATION

X-Micro WLAN PCMCIA Card must be installed and used in strict accordance with the manufacturer's instructions. This device complies with the following radio frequency and safety standards.

USA - Federal Communications Commission (FCC)

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference that may cause undesired operation.

Europe - R&TTE Directive

This device complies with the specifications listed below

- ETS 300-826 General EMC requirements for Radio equipment.
- ETS 300-328 Technical requirements for Radio equipment.
- EN60950 Safety Requirements for Radio equipment

The channel identifiers, channel center frequencies, and regulatory domains of each 22-MHz-wide channel are shown in following Table.

CE 0560 !

COUNTRY		CHANNELS	MAX. OUT POWER	
			INDOOR	OUTDOOR
Spain	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
France	2400-2454 MHz	1-8	< 100 mW EIRP	< 100 mW EIRP
France	2454-2483.5 MHz	9-13	< 100 mW EIRP	< 10 mW EIRP
Italy	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
UK	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Netherlands	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Germany	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Austria	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Belgium	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Switzerland	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Luxemburg	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Russia	2400-2483.5 MHz	1-13	<10 mW EIRP	<10 mW EIRP
Ireland	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Portugal	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Norway	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Denmark	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Finland	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Iceland	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Greece	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Lichtenstein	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Sweden	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP

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1 Introduction

First of all, we deeply appreciated your purchasing X-Micro wireless LAN PCMCIA Card. This powerful LAN card not only providing stable linking quality but also safe to transmitting data. We supply several security authentication login to enhance your safekeeping, as 802.1x and 802.11i standard.
This user manual will guide you to install X-Micro WLAN PCMCIA Card driver and utility quickly!

Features

- Completely accordance with IEEE 802.11 and IEEE 802.11b standards
- Ultra low power consumption in sleep mode
- High throughput and long transmission range
- 128-pin LQFP, world's most compact size
- Requires 50% fewer discrete components
- Patented integrated Wireless LAN MAC and Direct Sequence Spread Spectrum Baseband Processor in one chip
- On-chip A/D and D/A converters for I/Q Data, AGC, and Adaptive Power Control
- Multi-path Delay Spreads 250ns at 11Mbps
- Supports Antenna Diversity
- 1 Mbps, 2 Mbps, 5.5 Mbps, and 11 Mbps operation
- PCI local bus network interface controller
- Compliant to PCI Revision 2.2
- Supports ACPI, PCI power management
- Supports CardBus. The CIS can be stored in a 93C56
- Compliant to PC97, PC98, PC99 and PC2001 standards
- Supports auxiliary power-on internal reset, to be ready for remote wake-up when main power remains off.
- Supports auxiliary power auto-detect, and sets the related capability of power management registers in PCI configuration space
- Supports Short Preamble option
- Internal encryption/decryption engine executes IEEE 802.11 64-bit and 128-bit WEP
- 3.3V and 1.8V power supplies needed and 5V tolerant I/Os

2 Wireless LAN basics

Wireless LAN network defined by IEEE 802.11b standard committee could be Configure as: **Ad Hoc wireless LAN** or **Infrastructure wireless LAN.**
Ad Hoc network is a group of notebooks with wireless LAN PCMCIA Card, called a BSS (Basic Service Set). These notebooks use their wireless LAN PCMCIA Card to communicate with each other directly.

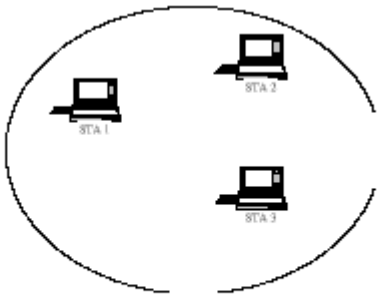


Figure 2-1 Ad Hoc wireless network

The most obvious differentiation between **Infrastructure** wireless network and **Ad Hoc** wireless network is that the notebooks in **Infrastructure** wireless network can make use of the resource in the Internet through **Access Point**.

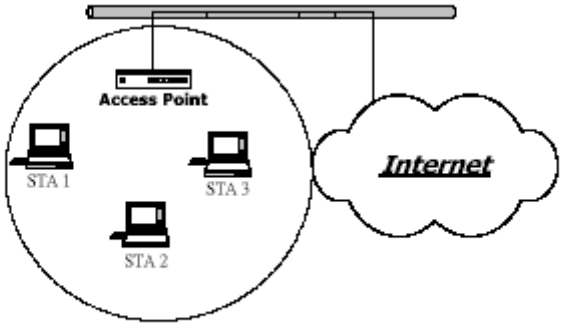
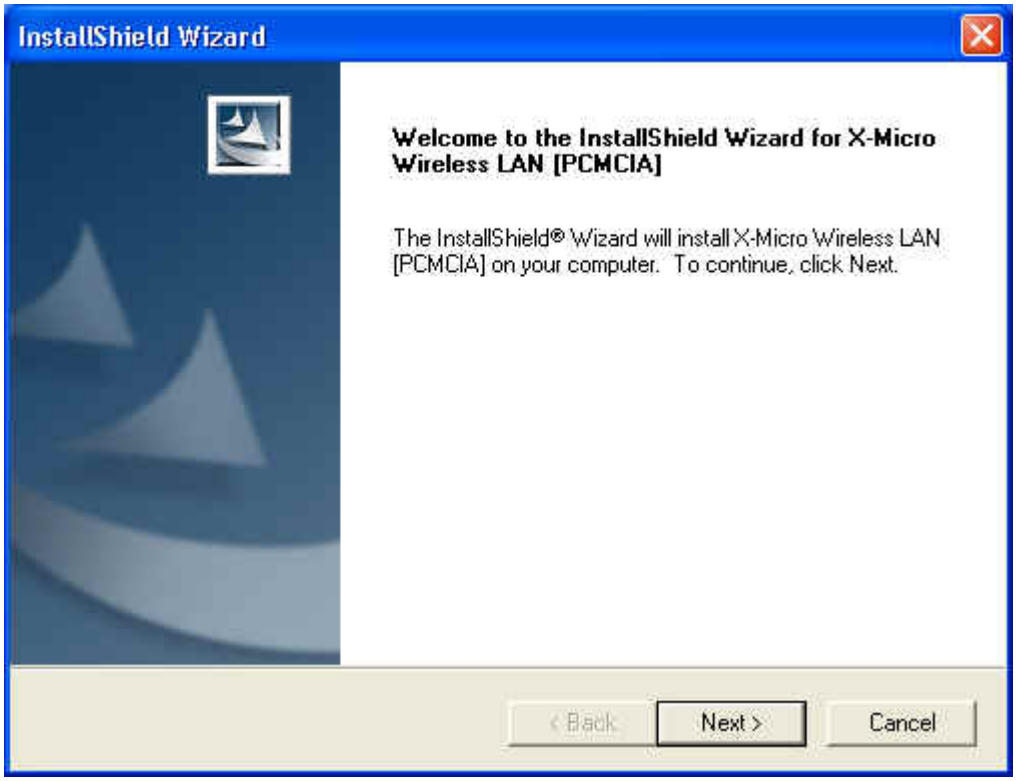


Figure 2-2 Infrastructure wireless network

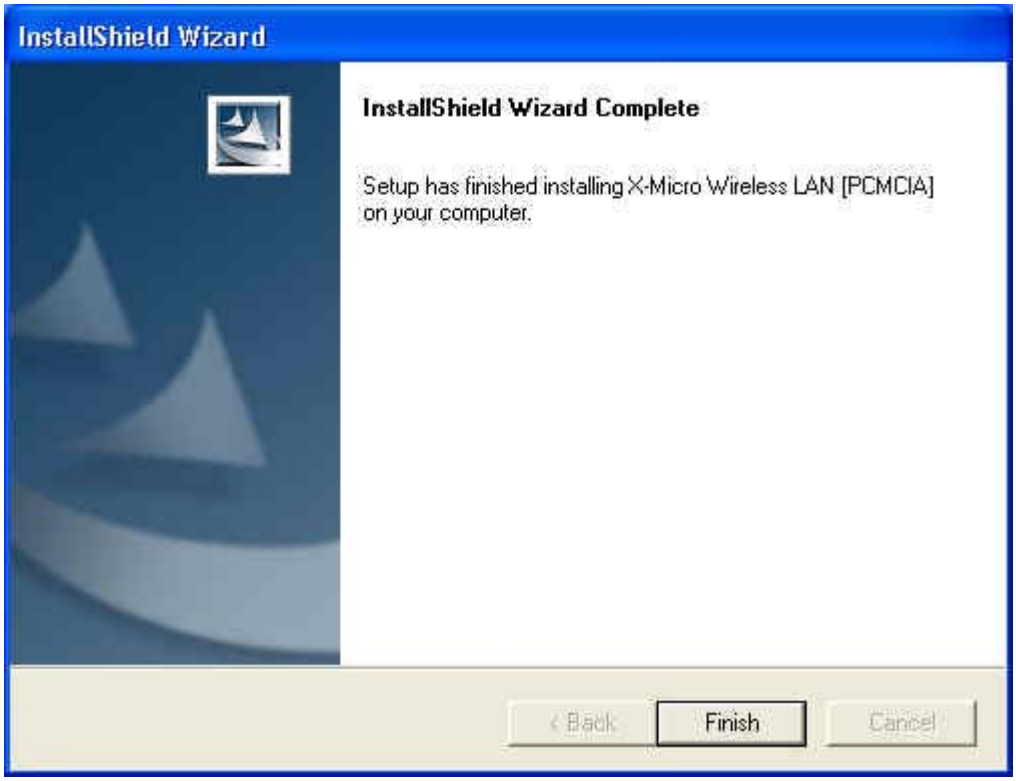
To set up your notebook's network as the type of "**Ad Hoc**" or "**Infrastructure**" wireless network depends completely on your requirement. Generally, if your network environment has an **Access Point**, it's recommend that you set it as "**Infrastructure**" mode to connect to the **Internet**.

3 Install Drivers and Utility.

1. Insert Install CD to your CD-ROM, It will auto run install program.


InstallShield Wizard
Welcome to the InstallShield Wizard for X-Micro Wireless LAN [PCMCIA]
The InstallShield® Wizard will install X-Micro Wireless LAN [PCMCIA] on your computer. To continue, click Next.
< Back
Next >
Cancel

2. Press Next Button and wizard will lead you to complete install driver and utility.



4 Configuration Utility.

There are two different utility to configure you wireless setting on XP, although we provide another choice, but in functional, both of them are similar. You can choose any one of them, which you more like or convenience to use.

4.1 Windows XP Wireless Network Connection Setting.

1. After finished install driver and utility on your system. Let's starting to setup your wireless card. First of all we will see the connection notice in the right corner (Fig. 4.1-1)

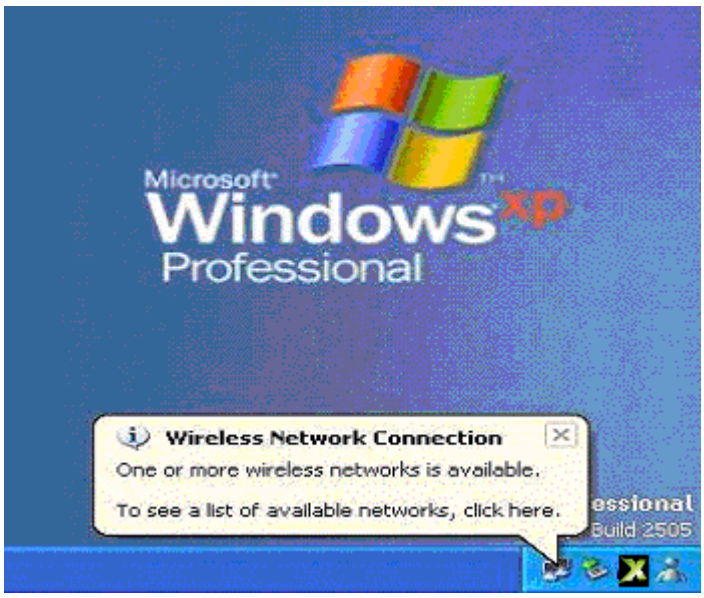


Fig. 4.1-1

2. Click the notice frame and it will popup a setup dialog as below (Fig. 4.1-2). If there have some efficient access point, which efficient range contains your PCMCIA Card range, then the SSID will show in the "Available networks" list. Select one and click the Connect button.

Connect to Wireless Network
The following network(s) are available. To access a network, select it from the list, and then click Connect.
Available networks:
Sales
DQAJC
usb22
default
This network requires the use of a network key (WEP). To access this network, type the key, and then click Connect.
Network key:
If you are having difficulty connecting to a network, click Advanced.
Advanced...
Connect
Cancel

Fig. 4.1-2

3. It’s normal sight when you pick a good connection. Windows XP will appear warning notice as following (Fig. 4.1-3) for a second.

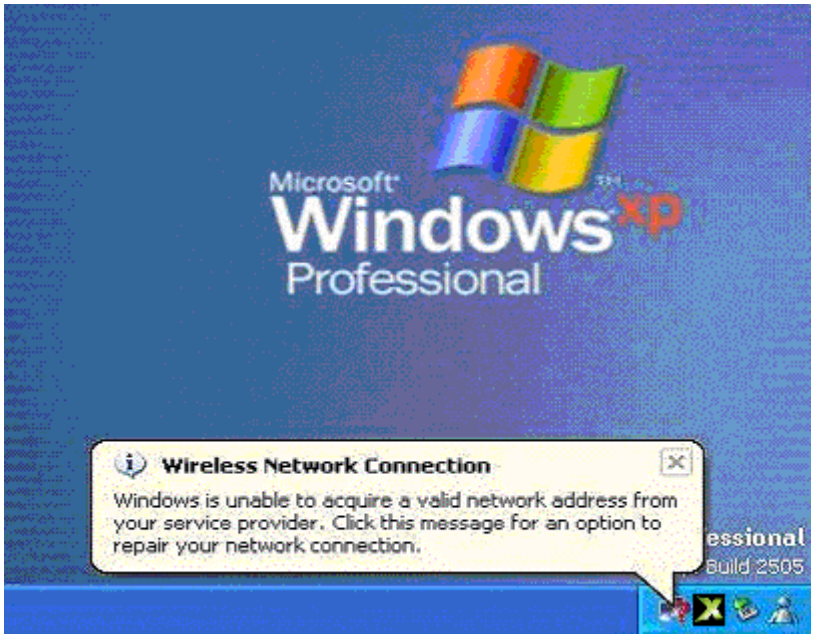

Microsoft
Windows xp
Professional
Wireless Network Connection
Windows is unable to acquire a valid network address from your service provider. Click this message for an option to repair your network connection.
essional
Build 2505

Fig. 4.1-3

4. After several seconds, you will see connection states information on notice frame (Fig.4.1-4). It will show SSID and signal strength.

Fig.4.1-4

4.2 Other Connection Setting.

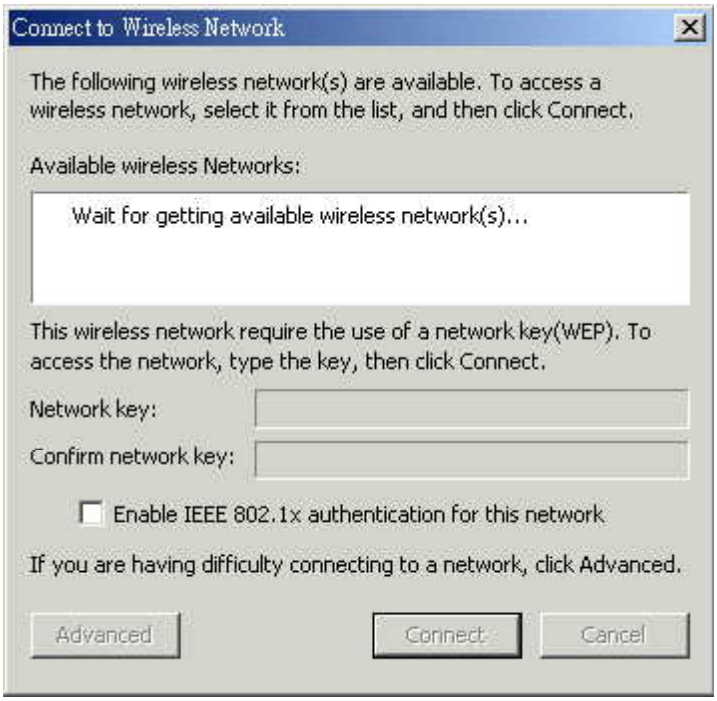
We provide another wireless setting utility for Windows (2000/me/98SE) use. Of course, XP version already prepared. Every function is the same like Windows 2k version.

1. Plug-in wireless card and you will see utility appear on your system tray. (Fig4.2-1)

(Fig4.2-1)

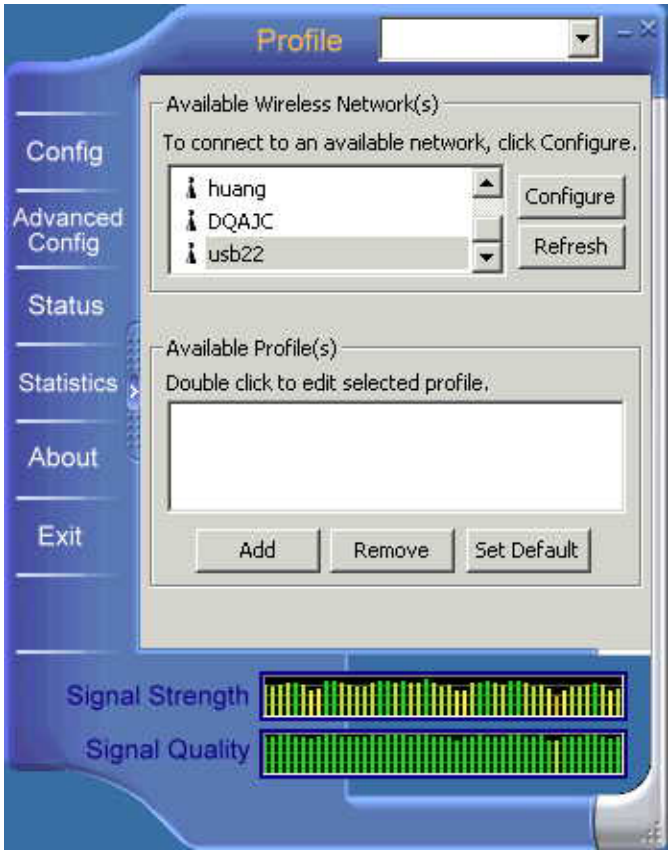
2. Double-click the crab icon, following dialog box will appear. (Fig4.2-2)

Wait a second till the blank list available wireless networks, if the net require WEP key, just key in correct WEP key to “Network key” field and confirm again, click Connect button to build valid connection.


Connect to Wireless Network
The following wireless network(s) are available. To access a wireless network, select it from the list, and then click Connect.
Available wireless Networks:
Wait for getting available wireless network(s)...
This wireless network require the use of a network key(WEP). To access the network, type the key, then click Connect.
Network key:
Confirm network key:
Enable IEEE 802.1x authentication for this network
If you are having difficulty connecting to a network, click Advanced.
Advanced
Connect
Cancel

(Fig4.2-2)

3.Trending towards advanced setting, we can click “Advanced” button at beginning, a new window will pop-up as following. (Fig4.2-3) You can assign Access Point which you want connect to. We also can change presently connection just click SSID from “Available Profile” list then click remove button to end off connection. At the bottom of window, it will show presently signal strength and link quality clearly. It can help us to select which Access Point owned the best link quality when we set our connection. If we always use some fixed profile, you can set it be a default to avoid the trouble, which you need set profile when you login network.



(Fig4.2-3)

4.If there are several wireless network coexist, we must consider with data Encryption. It depend on your Access Point security setting, one of them not match , them the connection will be failed.

5 Technical Specifications of X-Micro WLAN PCMCIA Card

Product Name	X-Micro WLAN PCMCIA Card
Standard	IEEE802.11b
Frequency Band	2.400GHz ~2.4835GHz
Spread Spectrum	DSSS (Direct Sequence Spread Spectrum)
Modulation Method	DQPSK/DBPSK/CCK
Data Rate	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Operation Mode	Ad hoc Infrastructure(Need Access Point).
Antenna	Diversity Patch Antenna
Power Consumption	Tx Typical : 380mA Rx Typical: 145mA Sleep Mode: 25mA
Security	64-bit or 128-bit WEP (Wired Equivalent Privacy)
Management	Windows-based utility for configuration and status monitoring.
Operating system supported.	Windows 98SE/ME/2000/XP and Linux.
Regulation	FCC part 15 for North America. CE/ETSI for European.
I/O Interface	32-bit Cardbus.
Sensitivity	–84dBm at < 8% BER
RF Output Power	16dBm (Typical)
LED indicator	Red LED: Active
Dimension	118.5(L) x 54(W) x 5(H) mm
Weight	37.5gram
Input Power	3.3 or 5V DC
Operating Temperature	0~55°C (operation)
Storage Temperature	-10 ~ 70°C
Humidity	5~90%(non-condensing)
Operating Range	Up to 300 m (depending on surrounding environment)

6 Glossary

IEEE 802.11 Standard

The IEEE 802.11 Wireless LAN standards subcommittee, which is formulating a standard for the industry.

Access Point

An internetworking device that seamlessly connects wired and wireless networks together.

Ad Hoc

An Ad Hoc wireless LAN is a group of computers, each with a WLAN adapter, connected as an independent wireless LAN. Ad Hoc wireless LAN is applicable at a departmental scale for a branch or SOHO operation.

BSSID

A specific Ad Hoc LAN is called a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSSID.

DHCP

Dynamic Host Configuration Protocol - a method in which IP addresses are assigned by server dynamically to clients on the network. DHCP is used for Dynamic IP Addressing and requires a dedicated DHCP server on the network.

Direct Sequence Spread Spectrum

This is the method the wireless cards use to transmit data over the frequency spectrum. The other method is frequency hopping. Direct sequence spreads the data over one frequency range (channel) while frequency hopping jumps from one narrow frequency band to another many times per second.

ESSID

An Infrastructure configuration could also support roaming capability for mobile workers. More than one BSS can be configured as an Extended Service Set (ESS). Users within an ESS could roam freely between BSSs while served as a continuous connection to the network wireless stations and Access Points within an ESS must be configured with the same ESSID and the same radio channel.

Ethernet

Ethernet is a 10/100Mbps network that runs over dedicated home/office wiring. Users must be wired to the network at all times to gain access.

Gateway

A gateway is a hardware and software device that connects two dissimilar systems, such as a LAN and a mainframe. In Internet terminology, a gateway is another name for a router. Generally a gateway is used as a funnel for all traffic to the Internet.

IEEE

Institute of Electrical and Electronics Engineers

Infrastructure

An integrated wireless and wired LAN is called an Infrastructure configuration. Infrastructure is applicable to enterprise scale for wireless access to central database, or wireless application for mobile workers.

ISM Band

The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the so-called ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available worldwide. This presents a truly revolutionary opportunity to place convenient high-speed wireless capabilities in the hands of users around the globe.

Local Area Network (LAN)

A LAN is a group of computers, each equipped with the appropriate network adapter card connected by cable/air, that share applications, data, and peripherals. All connections are made via cable or wireless media, but a LAN does not use telephone services. It typically spans a single building or campus.

Network

A network is a system of computers that is connected. Data, files, and messages can be transmitted over this network. Networks may be local or wide area networks.

PCMCIA

Personal Computer Memory Card International Association. Also a PCMCIA card is also referred to Cardbus Adapter.

Protocol

A protocol is a standardized set of rules that specify how a conversation is to take place, including the format, timing, sequencing and/ or error checking.

SSID

A Network ID unique to a network. Only clients and Access Points that share the same SSID are able to communicate with each other. This string is case-sensitive.

Simple Network Management Protocol (SNMP)

Simple Network Management Protocol is the network management protocol of TCP/IP. In SNMP, agents-which can be hardware as well as software-monitor the activity in the various devices on the network and report to the network console workstation. Control information about each device is maintained in a structure known as a management information block.

Static IP Addressing

A method of assigning IP addresses to clients on the network. In networks with Static IP address, the network administrator manually assigns an IP address to each computer. Once a Static IP address is assigned, a computer uses the same IP address every time it reboots and logs on to the network, unless it is manually changed.

Transmission Control Protocol / Internet Protocol (TCP/IP)

TCP/IP is the protocol suite developed by the Advanced Research Projects Agency (ARPA). It is widely used in corporate Internet works, because of its superior design for WANs. TCP governs how packet is sequenced for transmission the network. The term “TCP/IP” is often used generically to refer to the entire suite of related protocols.

Transmit / Receive

The wireless throughput in Bytes per second averaged over two seconds.

Wide Area Network (WAN)

A WAN consists of multiple LANs that are tied together via telephone services and / or fiber optic cabling. WANs may span a city, a state, a country, or even the world.

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